



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Patent Application of

Confirmation No.: 2005

HARRIS et al.

Atty. Ref.: 540-560

Serial No. 10/529,227

Group: 1743

Filed: March 25, 2005

Examiner: N. Turk

For: CORROSION SENSING MICROSENSORS

APPEAL BRIEF

On Appeal From Group Art Unit 1743

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June 7, 2007

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Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

I. REAL PARTY IN INTEREST

The real party in interest in the above-identified appeal is BAE SYSTEMS plc by virtue of an assignment of rights from the inventors to BAE SYSTEMS plc recorded on March 25, 2005 at Reel 17051, Frame 857.

II. RELATED APPEALS AND INTERFERENCES

There are believed to be no related appeals, interferences or judicial proceedings with respect to the present application, other than the Pre-Appeal Brief Request for Review previously filed in this appeal on March 7, 2007.

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III. STATUS OF CLAIMS

Claims 1-22 stand rejected in the Final Official Action. The Examiner contends that claims 1-5 and 7 are rejected under 35 USC §102(b) as being anticipated by Kim (U.S. Patent 6,383,451). The Examiner contends that claims 1-22 are rejected under 35 USC §103 over the Kim reference in combination with various other cited prior art references, including Ansuini (U.S. Patent 4,780,664), Kordecki (EP 0932037), Agarwala (U.S. Patent 5,338,432), Glass '773 (U.S. Patent 5,437,773), and Glass '859 (U.S. Patent 5,409,859) in various combinations. The above rejections of claims 1-22 are appealed.

IV. STATUS OF AMENDMENTS

No further response has been submitted with respect to the Final Official Action in this application other than the filing of a Pre-Appeal Brief Request for Review, which "Notice of Panel Decision" was mailed April 5, 2007. The Notice of Panel Decision includes a handwritten statement that "the rejection under 35 U.S.C. 102(b) applied to claims 1-5 and 7 has been withdrawn." Appellants are treating this handwritten statement as a withdrawal of the entire portion of the Final Rejection under the subheading "Claim Rejections – 35 USC § 102."

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Appellants' specification and figures provide an explanation of the claimed invention set out in independent claim 1, with each claimed structure addressed as to its location in the specification and in the figures.

“1. A microsensor for detecting corrosive media acting on a metallic material when mounted in situ adjacent a location in the metallic material, the microsensor including:

at least two common terminals [elements 8, 10 shown in Figure 1 and discussed on page 4, lines 9-26 and elsewhere in the specification]; and

a plurality of corrosive tracks [elements 16 shown in Figure 1 and discussed on page 4, lines 21-26 and elsewhere in the specification], each of the tracks electrically connecting said at least two common terminals, exposed to the corrosive media and comprising a patterned conductive thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends.”

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-7 stand rejected under 35 USC §103 as unpatentable over Kim in view of Ansuini.

Claims 8-10 stand rejected under 35 USC §103 as unpatentable over Kim in view of Kordecki.

Claims 11 and 12 stand rejected under 35 USC §103 as unpatentable over Kim in view of Agarwala.

Claims 13-15 and 22 stand rejected under 35 USC §103 as unpatentable over Kim in view of Glass '773.

Claims 16-20 stand rejected under 35 USC §103 as unpatentable over Kim in view of Glass '773 in further view of Kordecki.

Claim 21 stands rejected under 35 USC §103 as unpatentable over Kim in view of Glass '773 and in view of Glass '859.

Claims 8-10 stand rejected under 35 USC §103 as unpatentable over Kim in view of Kordecki in view of Ansuini.

Claims 11 and 12 stand rejected under 35 USC §103 as unpatentable over Kim in view of Agarwala in view of Ansuini.

Claims 13-15 and 22 stand rejected under 35 USC §103 as unpatentable over Kim in view of Glass '773 in view of Ansuini.

Claims 16-20 stand rejected under 35 USC §103 as unpatentable over Kim in view of Glass '773 in view of Kordecki and in view of Ansuini.

Claim 21 stands rejected under 35 USC §103 as unpatentable over Kim in view of Glass '773 in view of Glass '859 and in view of Ansuini.

VII. ARGUMENT

Appellants' arguments include the fact that the burden is on the Examiner to first and foremost properly construe the language of the claims to determine what structure and/or method steps are covered by that claim. After proper construction of the claim language, the burden is also on the Examiner to demonstrate where a plurality of references (in the case of an obviousness rejection) teaches each of the structures and/or method steps recited in independent claim 1.

Furthermore, the Court of Appeals for the Federal Circuit has stated in the case of *In re Rouffet*, 47 USPQ2d 1453, 1458 (Fed. Cir. 1998)

to prevent the use of hindsight based on the invention to defeat patentability of the invention, this court **requires** the examiner to show a **motivation** to combine the references that create the case of obviousness. In other words, the Examiner **must show reasons** that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. (Emphasis added).

A. The Examiner fails to demonstrate where Kim teaches “a plurality of corrosive tracks” where each track is comprised of a “thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends”

In the rejection of claims 1-7 under 35 USC §103, beginning on page 4 of the Final Official Action, the Examiner discusses but fails to allege where or how the

Kim reference discloses the subject matter of claim 1, i.e., wherein each of the “plurality of corrosive tracks” comprises “a patterned conductive thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends.”

Specifically, the Examiner is reminded that the Court of Appeals for the Federal Circuit has held that “the PTO has the burden under Section 103 to establish a *prima facie* case of obviousness.” *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). “It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.”

The portion of the Kim reference teaching this claimed structure has not been identified by the Examiner.

B. The Examiner fails to appreciate that Kim teaches away from Appellants’ claimed “plurality of corrosive tracks” which comprise a “patterned conductive thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends”

As can be seen by reviewing Figures 1 and 5 and the accompanying descriptions in the Kim reference, the only disclosure of metal thin film material used for corrosion rate measurement are the “thin lines 41” which are straight lines. (Kim, column 2, lines 47-50).

Thus, Kim, instead of teaching the claimed plurality of corrosive tracks with the “generally U-shaped bends,” actually teaches that it is preferable to use straight lines and thus would lead one of ordinary skill in the art away from the claim 1 embodiment.

The Federal Circuit has opined that it is “error to find obviousness where references ‘diverge from and teach away from the invention at hand’.” *Id.* As a result, the teachings in the Kim reference (apparently ignored by the Examiner) would specifically lead one of ordinary skill in the art away from Appellants’ claimed “U-shaped bends” in the plurality of corrosion tracks.

C. The Examiner fails to demonstrate where Ansuini teaches “a plurality of corrosive tracks” where each track is comprised of a “thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends”

As noted above in Section A, the burden is on the Examiner to establish where the cited prior art reference comprises an “objective teaching” in the prior art of the claimed subject matter. Just as with the Kim reference, the Ansuini reference fails to teach a plurality of corrosive tracks in which each track is comprised of “a plurality of mutually inverted generally U-shaped bends.”

Specifically, Ansuini teaches only a single track between two terminals and thus fails to teach the claimed “plurality of corrosive tracks . . . mutually inverted generally U-shaped bends.”

Because the Examiner has failed to meet his burden of establishing where the Ansuini reference teaches this claimed plurality of elements, it does not support any rejection under 35 USC §103.

D. The Examiner fails to appreciate that Ansuini teaches away from “a plurality of corrosive tracks” where each track is comprised of a “thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends”

The Ansuini reference teaches terminals 60 and 70 which have a single track 66 connected therebetween. Thus, the teaching of a single track would lead one of ordinary skill in the art away from the claimed element of a “plurality of corrosive tracks” as recited in claim 1. Additionally, because the Examiner does not address the Ansuini teaching, he does not consider why it would be obvious to disregard the specific teaching of the Ansuini patent.

Ansuini would only lead one of ordinary skill in the art to have a single corrosive track and would lead

E. The Examiner provides no basis for a rejection of claim 1 or any claims dependent thereon under 35 USC §103 as being unpatentable over Kim in view of Ansuini

Because all claims in this application depend from claim 1, if claim 1 is patentable, all remaining claims must be patentable. Therefore, Appellants will direct the Board’s attention to the rejection of independent claim 1, and the only basis upon which claim 1 is rejected is under 35 USC §103 as unpatentable over

only the Kim reference in view of only the Ansuini reference. Furthermore, in order to avoid repetition, Appellants will refer to the above sections and incorporate the substance of the material therein by reference.

1. The Examiner fails to appreciate that even the combination of the Kim and Ansuini references fail to teach Appellants' claimed combination of "at least two common terminals" and "a plurality of corrosive tracks" each of which track includes "a plurality of mutually inverted generally U-shaped bends"

As noted in Section A, the Examiner fails to demonstrate where the Kim reference teaches the claimed subject matter. In Section C, the Examiner fails to indicate where the Ansuini reference teaches this same claimed subject matter. Accordingly, neither the Kim nor Ansuini reference teach one element of Appellants' claimed microsensor, i.e., the "plurality of corrosive tracks" in which each track follows "a path which includes a plurality of mutually inverted generally U-shaped bends."

In view of the fact that the burden is clearly on the Examiner to point out where the prior art teaches the claimed subject matter and in view of Sections A and C above, the fact that neither Kim nor Ansuini teach at least the second element recited in Appellants' independent claim 1, even if the references were combined, they cannot disclose the subject matter of claim 1 or claims dependent thereon.

Therefore, in view of the above, the Examiner has simply failed to meet his burden of proving that the subject matter of claim 1 was contained in at least one of the Kim and Ansuini references and the rejection fails.

2. The Examiner fails to articulate or identify any “reason” or “motivation” for combining the Kim and Ansuini references

It is also apparent that neither of the Kim nor Ansuini references contain any “reason” or “motivation” for combining the teachings therein, even assuming that one of the references taught the claimed “plurality of corrosive tracks” with “a plurality of mutually inverted generally U-shaped bends.” (which as noted above, they do not).

As noted in *In re Rouffet* above, it is not sufficient for the Examiner to identify that the claimed “at least two common terminals” and the claimed “plurality of corrosive tracks” each track with “a plurality of mutually inverted generally U-shaped bends” are disclosed in separate references – there must also be some “reason” or “motivation” to combine these references. This requirement of some “reason” for combining references was recently confirmed in a Memorandum dated May 3, 2007 by the Deputy Commissioner for Patent Operations, Margaret A. Focarino, when she stated that “in formulating a rejection under 35 USC §103(a) based upon a combination of prior art elements, it remains necessary to identify the reasons why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed.”

The Examiner, in the portion of page 4 of the Final Rejection which addresses the obviousness rejection of claims 1-7, provides no reason or motivation for combining the two references in the manner of claim 1. At best, the Examiner suggests that it would be obvious to modify the Kim device in the manner of Ansuini “in order to provide a corrosive track configuration which saves space.” However, this allegation of “obvious” does not address the fact that neither Kim nor Ansuini teach the two claimed elements, i.e., the “at least two common terminals” and the “plurality of corrosive tracks,” each track having the “plurality of mutually inverted generally U-shaped bends.”

Moreover, the Examiner’s “reason,” at least as expressed on page 4, seems to relate to combining the disclosures in the Kim and Ansuini references to support a rejection of the feature in dependent claim 6 relating to a “minimum radius of curvature” and not the independent claim 1.

Again, because the burden is on the Examiner to establish some “reason” or “motivation” for combining references and the fact that the Examiner fails to meet this burden, there is no *prima facie* case of obviousness of independent claim 1 or claims dependent thereon under the provisions of 35 USC §103 and any further rejection thereunder is respectfully traversed.

3. The Examiner fails to appreciate that both Kim and Ansuini teach away from Appellants' claimed combination of elements

As noted in Section B above, the Kim reference actually teaches away from the claimed “plurality of corrosive tracks . . . following a path which includes a plurality of mutually inverted generally U-shaped bends.” As noted in Section D above, the Ansuini reference clearly teaches away from the claimed “plurality of corrosive tracks, each of the tracks electrically connecting said at least two common terminals”

As is well settled, the Court of Appeals for the Federal Circuit has consistently held that it is “error to find obviousness where references ‘diverge from and teaching away from the invention at hand’.” *In re Fine*, at 1599. Even if only one of the Kim or Ansuini references taught away from the combination, that would destroy the Examiner’s case for obviousness. However, as demonstrated above, both Kim and Ansuini teach away from the claimed combination of elements, with Kim teaching straight line interconnections between the two common terminals and Ansuini teaching only a single conductive thin film track interconnecting the terminals.

Quite clearly, because both references teach away from the claimed subject matter, the claim 1 invention is clearly non-obvious in view thereof. Thus, because claim 1 is clearly patentable over the Kim and Ansuini combination, any

further rejection of claim 1 or claims 2-22 dependent thereon is completely unsupported in the outstanding Final Rejection.

VIII. CONCLUSION

As demonstrated above, both the Kim and Ansuini references fail to teach Appellants' claimed "plurality of corrosive tracks." In fact, both references "teach away" from the combination specified in Appellants' claim. The Examiner has failed to establish that a literal combination of the Kim and Ansuini references discloses all claimed structures and therefore the rejection fails. The rejection also fails because the Examiner has failed to comply with Federal Circuit and MPEP requirements that he identify some "reason" or "motivation" for combining references and thus has failed to meet his burden of establishing a *prima facie* basis of obviousness. Finally, the Examiner has ignored the fact that not one, but both references would lead one of ordinary skill in the art away from the claimed combination, thereby evidencing the non-obviousness of the claimed invention.

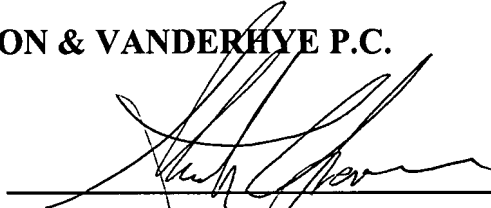
As a result of the above, there is simply no support for the rejections of Appellants' independent claim or claims dependent thereon under 35 USC §103. Thus, and in view of the above, the rejection of claims 1-22 under 35 USC §103 is clearly in error and reversal thereof by this Honorable Board is respectfully requested.

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Respectfully submitted,

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By: _____



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SCS:kmm
Enclosure



IX. CLAIMS APPENDIX

1. (currently amended) A microsensor for detecting corrosive media acting on a metallic material when mounted in situ adjacent a location in the metallic material, the microsensor including:

at least two common terminals; and

a plurality of corrosive tracks, each of the tracks electrically connecting said at least two common terminals, exposed to the corrosive media and comprising a patterned conductive thin film track following a path which includes a plurality of mutually inverted generally U-shaped bends.

2. (original) A microsensor according to claim 1, wherein each said corrosive track has a width which is substantially constant across its length.

3. (previously presented) A microsensor according to claim 1, wherein each said corrosive track is formed to meander across a surface portion of a common substrate.

4. (original) A microsensor according to claim 3, wherein each said surface portion comprises one of a set of linear corridors on the common substrate.

5. (previously presented) A microsensor according to claim 1, wherein the minimum separation between adjacent corrosive tracks is preferably at least as great as the average width of said corrosive tracks.

6. (previously presented) A microsensor according to claim 1 wherein each said bend has a minimum radius of curvature which is greater than half the average width of said corrosive tracks.

7. (previously presented) A microsensor according to claim 1, comprising a resistivity sensor having said plurality of corrosive tracks arranged to provide a measurable variation in resistivity in response to prolonged exposure to corrosive media.

8. (original) A microsensor according to claim 7, comprising a reference sensor arranged to provide a measurable variation in resistivity in response to changes in temperature, the reference sensor having a similar temperature dependence as said resistivity sensor.

9. (original) A microsensor according to claim 8, wherein the reference sensor takes substantially the same form as said resistivity sensor.

10. (previously presented) A microsensor according to claim 8, wherein said reference sensor is formed in an overlapping arrangement with said resistivity sensor.

11. (previously presented) A microsensor according to claim 1, comprising a galvanic sensor having at least one said corrosive track made of a first metallic material and at least one further thin film track made of a second, different, metallic material, the tracks being arranged to provide a measurable variation in galvanic voltage in response to exposure to an electrolyte.

12. (original) A microsensor according to claim 11, wherein the galvanic sensor comprises a plurality of said corrosive tracks and a plurality of said further tracks, arranged in an interdigitated pattern.

13. (original) A microsensor according to claim 1, comprising a resistance thermometer sensor, a platinum resistance thermometer for example, arranged for measuring a temperature in the area in which the microsensor is mounted.

14. (original) A microsensor according to claim 1, wherein the corrosive tracks are made of a metallic alloy.

15. (original) A microsensor according to claim 14, wherein at least one corrosive tracks are made of an aluminium alloy.

16. (previously presented) Apparatus comprising a metallic component made from a metallic alloy in bulk form and a microsensor according to claim 14 mounted in situ adjacent a location in the component for detecting corrosive media acting on the bulk alloy, the bulk alloy having a main metal constituent which is the same as the main metal constituent of the track alloy, and at least one alloying metal constituent which is the same as the alloying metal constituent of the track alloy.

17. (original) Apparatus according to claim 16, wherein the proportion of the alloying constituent in the track alloy is similar to the proportion of the alloying constituent of the bulk alloy, to within 3% of the total constituents of the bulk alloy.

18. (original) Apparatus according to claim 16, wherein the proportion of the alloying constituent in the track alloy is similar to the proportion of the alloying constituent of the bulk alloy, to within 1% of the total constituents of the bulk alloy.

19. (previously presented) Apparatus according to claim 16, further comprising a second metallic component made from a different metallic alloy in bulk form and a second microsensor mounted in situ adjacent a separate location, which is in the second component, for detecting corrosive media acting on the different bulk alloy, the different bulk alloy having a main metal constituent and at least one alloying metal constituent, the second microsensor having at least one thin film track made from a metallic alloy which is different to the metallic alloy from which the at least one track of the first-mentioned microsensor is made and having a main metal constituent which is the same as the main metal constituent of the different bulk metallic alloy, and at least one alloying metal constituent which is the same as the main alloying metal constituent of the different bulk metallic alloy.

20. (previously presented) An aircraft including apparatus according to claim 16.

21. (previously presented) A method of manufacture of a microsensor according claim 14, comprising depositing the alloy of said at least one thin film track onto a substrate to form a thin film and annealing the thin film to encourage metallic grain growth.

22. (original) A method according to claim 21, wherein the depositing step comprises sputtering the alloy of the said at least one thin film track onto the substrate.

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X. EVIDENCE APPENDIX

None.

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XI. RELATED PROCEEDINGS APPENDIX

None.